

CLAIMS

What is claimed is:

1. A dental articulating system configured to duplicate at least a portion of a patient's mouth for use in producing a dental prosthesis, the device comprising:

- 5 a) a pair of trays, pivotally coupled together, the trays pivoting with respect to one another between:
 - i) a closed configuration, in which the trays are opposingly spaced-apart from one another; and
 - 10 ii) an open configuration, in which the trays are pivoted away from one another;
 - b) a plurality of registration pin holes, formed in at least one of the trays;
 - c) a thin membrane, disposed across a registration pin hole, configured to close off the registration pin hole and resist dental casting material from substantially filling the registration pin hole; and
 - 15 d) the thin membrane being breakable by a registration pin inserted into the registration pin hole with the registration pin being extendable through the thin membrane.

- 20 2. A system in accordance with claim 1,
a plurality of registration pins, disposable in the plurality of registration pin holes.

3. A system in accordance with claim 1, wherein the thin membrane is formed integrally with the tray.

- 25 4. A system in accordance with claim 1, wherein the thin membrane is separately formed from the tray and attached to the tray.

5. A system in accordance with claim 1, wherein the thin membrane is disposed near a bottom of the registration pin hole.

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6. A system in accordance with claim 1, wherein the thin membrane is disposed at a die receiving surface of at least one of the trays.

7. A system in accordance with claim 1, further comprising:

a plurality of thumb indentations, positioned at a bottom of the registration pin holes, having a depth to receive a distal end of a registration pin extending through a registration pin hole.

5 8. A system in accordance with claim 1, further comprising:

registration struts, formed in at least one of the trays, having a hexagonal cross section.

9. A system in accordance with claim 1, further comprising:

10 a trough formed in at least one of the trays by a perimeter wall, the perimeter wall having a wavy profile with a plurality of arcuate indentations.

10. A system in accordance with claim 1, further comprising:

15 a hinge, integrally formed with the trays and positioned between the trays, including:

i) a pivot axle, associated with one of the trays;

ii) a shoulder, extending at least partially around the pivot axle and creating two axle portions extending on each side of the shoulder; and

20 iii) a pair of fingers, associated with another of the trays, pivotally positioned on opposite sides of the pivot axle and on opposite sides of the shoulder and separated by both the axle and the shoulder.

11. A method for forming a dental model, comprising the steps of:

25 a) pressing a registration pin through a thin membrane extending across a registration pin hole on at least one of lower and upper trays of a dental articulator so that the registration pin breaks the thin membrane and extends through the thin membrane;

b) forming a prepped model of a prepped tooth over the registration pin on the tray of the dental articulator, the prepped model of the prepped tooth to receive a dental prosthesis; and

30 c) forming an opposing model of an opposing tooth on an opposite tray of the dental articulator, the opposing model of the opposing tooth opposing the prepped tooth.

12. A method in accordance with claim 11, further comprising the step of:

segmenting the prepped model on sides corresponding to the prepped tooth to form a prosthesis die.

13. A method in accordance with claim 11, wherein the step of forming the prepped
5 model further includes the step of:

disposing dental casting material over the registration pin holes in at least one of the trays with the thin membrane formed integrally with the tray and extending across the registration pin holes to resist dental casting material from substantially filling the registration pin holes.

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14. A method in accordance with claim 11, wherein the step of pressing the registration pin through the thin membrane further includes the step of:

pressing the registration pin through a thin membrane extending across the registration pin hole near a bottom of the registration pin hole.

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15. A method in accordance with claim 11, wherein the step of pressing the registration pin through the thin membrane further includes the step of:

pressing registration pin through the thin membrane disposed at a die receiving surface of at least one of the trays.

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16. A method in accordance with claim 11, further comprising the step of:

pushing a thumb or finger into a thumb indentation positioned at a bottom of a registration pin hole to push a registration pin out of the registration pin hole.

17. A method in accordance with claim 11, wherein the step of forming the prepped
25 model further includes the step of:

disposing dental casting material around registration struts in at least one of the trays, the registration struts having a hexagonal cross section.

18. A method in accordance with claim 11, wherein the step of forming the prepped
30 model further includes the step of:

disposing dental casting material in at least one of the trays with a trough formed by a perimeter wall, the perimeter wall having a wavy profile with a plurality of arcuate indentations.

19. A method in accordance with claim 11, further comprising the step of:

pivoting the lower and upper trays about a hinge integrally formed with the trays,
the hinge including a first portion with a shoulder circumscribing an axle and a second
5 portion with opposing fingers movably disposed on opposite sides of the axle and on
opposite sides of the shoulder.

20. A method in accordance with claim 11, wherein the steps of forming the prepped
and opposing models further includes the steps of:

10 a) obtaining an impression of at least some of a patient's teeth, the impression
including a prepped side with an impression of the prepped tooth to receive the dental
prosthesis, and an opposing side with an impression of the opposing tooth opposing the
prepped tooth;

b) introducing dental casting material between the upper tray and the opposing
15 side of the impression to form the opposing model of the opposing tooth;

c) introducing dental casting material between the lower tray and the prepped side
of the impression to form the prepped model of the prepped tooth; and

d) removing the impression from the dental articulator leaving the opposing and
the prepped models on respective upper and lower trays.

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21. A method for forming a dental model, comprising the steps of:

a) obtaining an impression of at least some of a patient's teeth, the impression
including a prepped side with an impression of a prepped tooth to receive a dental
prosthesis, and an opposing side with an impression of an opposing tooth opposing the
25 prepped tooth;

b) obtaining a dental articulator with upper and lower trays pivotally coupled
together and a thin membrane extending across a registration pin hole in at least one of
the trays;

c) disposing dental casting material on the upper tray and in the opposing side of
30 the impression;

d) disposing the opposing side of the impression over the upper tray so that dental
casting material extends therebetween and forms an opposing model of the opposing
tooth;

e) positioning a registration pin in the registration pin hole in at least one of the trays at a location corresponding to the prepped tooth;

f) pressing the registration pin through the thin membrane extending across the registration pin hole;

5 g) disposing dental casting material on the lower tray and in the prepped side of the impression;

h) disposing the lower tray over the prepped side of the impression so that the dental casting material extends therebetween and forms a prepped model of the prepped tooth; and

10 i) removing the impression from the dental articulator.

22. A method in accordance with claim 21, further comprising the step of:

segmenting the dental casting material of the prepped model on sides corresponding to the prepped tooth to form a prosthesis die.

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23. A method in accordance with claim 21, wherein the step of introducing dental casting material further includes the step of:

20 disposing the dental casting material over the registration pin holes with the thin membrane being integrally formed with at least one of the trays and extending across the registration pin holes to resist the dental casting material from substantially filling the registration pin holes.

24. A method in accordance with claim 21, wherein the step of pressing the registration pin through the thin membrane further includes the step of:

25 pressing the registration pin through the thin membrane extending across the registration pin hole near a bottom of the registration pin hole.

25. A method in accordance with claim 21, wherein the step of pressing the registration pin through the thin membrane further includes the step of:

30 pressing the registration pin through the thin membrane disposed at a die receiving surface of at least one of the trays.

26. A method in accordance with claim 21, wherein the step of introducing dental casting material further includes the step of:

disposing dental casting material around registration struts in at least one of the trays, the registration struts having a hexagonal cross section.

27. A method in accordance with claim 21, wherein the step of introducing dental
5 casting material further includes the step of:

disposing dental casting material in a trough formed by a perimeter wall, the
perimeter wall having a wavy profile with a plurality of arcuate indentations.

28. A method in accordance with claim 21, further comprising the step of:
10 pivoting the lower and upper trays about a hinge integrally formed with the trays,
the hinge including a first portion with a shoulder circumscribing an axle and a second
portion with opposing fingers movably disposed on opposite sides of the axle and on
opposite sides of the shoulder.

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